QUARTERLY REPORT #4

FIELD DATA

AQUATIC BIOLOGY

SHOUT
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VTN COLORADO, INC.

MEMO

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March 8, 1976

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TO: Dave Larson

FROM: Chuck Ray

The attached material represents raw data of samples that were mostly discussed in QR No. 4. Some of these materials may be on file with AOSO, but I believe that most are not. Please have them filed.

760483

oct 24 Surber
P177 (QR#4)

x_i	x_i^2	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
4	16	-18.75	351.56
1	1	-21.75	473.06
22	484	- 0.75	0.56
32	1024	9.25	85.56
15	225	- 7.75	60.06
16	256	-6.75	45.56
79	6241	56.25	3164.06
50	2500	27.25	742.56
20	400	- 2.75	7.56
24	576	1.25	1.56
30	900	7.25	52.56
15	225	-7.75	60.06
27	729	4.25	18.06
6	36	-16.75	280.56
20	400	- 2.75	7.56
3	9	-19.75	390.06
Σ 14022			$\sum_{i=1}^{16}(x_i-\bar{x})^2 = 5740.9375$

$\Sigma x_i = 364$

$\bar{x} = 22.75$

$\bar{x} = 22.75$

$S^2 = 382.7$

$S = 19.54$

$S_{\bar{x}} = 4.89$

$\bar{x} \pm (z)(S_{\bar{x}}) =$

22.75 ± 6.56

~~$\alpha = 10$~~

$CL = 71\%$

$n = \frac{(1.341)^2(382.7)}{(22.75 \times 0.1)^2}$

$n = \frac{688.09}{5.176} = 132$

132 samples required for CL 90%

Not for diversity

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 1 Sampling Method Qualitative Collection Date X-10-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp A		95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*	Sp A		99
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae		Sp A		130
	Athericidae	*Atherix*	Sp. A		177
				TOTAL	

Biologist [signature] Total Number of Taxa 4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-1 Sample No. 1 Sampling Method Surber Collection Date X-9-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	2	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis	Spec.	2	17
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	4	

Biologist C. L. Berry Total Number of Taxa 2

$N_1 = 2$ $T = 1$

$N_2 = 2$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-1 Sample No. 2 Sampling Method Surber Collection Date X-9-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist _____ Total Number of Taxa 1

d = 0

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 1 Sampling Method Surber Collection Date X-9-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		H.	*Sp. A*	1	2
		Rhithrogena	*undulata*	6	6
	Baetidae	*Baetis*	*bicaudatus*	3	15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*Sp. A*	4	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	*Sp. A*	3	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	*Simulium*	*Sp. A*	2	128
	Culicidae				
	Chironomidae	*PELOPIA*	*Sp A*	1	136
	Ceratopogonidae				
	Lumbriculidae			1	176
			TOTAL	22	

Biologist C. Ray Total Number of Taxa 9

$\bar{d} =$

$N_1 = 1$ $N_2 = 4$ $N_3 = 3$ $N_4 = 1$ $N_5 = 4$ $N_6 = 3$ $N_7 = 2$ $N_8 = 1$ $N_9 = 1$

$\bar{d} = 2.87$ $r = 2.23$ $\bar{d}_{MAX} = 2.77$ $\bar{d}_{MIN} = 1.53$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 2 Sampling Method SURBER Collection Date X-10-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
	"	"	Sp. A	9	2
		Rhithrogena	*undulata*	10	6
	Baetidae	*Baetis*	*bicaudatus*	4	15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania	*POWELLI*	1	23
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	Sp A	2	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	2	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		-	99
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	*Simulium*	Sp. A	4	128
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				32	

TOTAL

Biologist C Lay Total Number of Taxa 7

$N_1 = 9$ $N_2 = 10$ $N_3 = 4$ $N_4 = 1$ $N_5 = 2$ $N_6 = 2$ $N_7 = 4$

$\bar{d} = 2.45$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 3 Sampling Method Surber Collection Date X-10-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	*Sp. A*	2	17
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*Sp. A*	2	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	*Sp. A*	1	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	*Simulium*	*Sp. A*	1	128
	Culicidae				
	Chironomidae	*Chironomus*	*Sp. A*	1	130
	Ceratopogonidae				
			TOTAL	15	

Biologist C Ray Total Number of Taxa 7

$N_1 = 2$ $N_2 = 7$ $N_3 = 1$ $N_4 = 2$

$N_3 = 1$ $N_4 = 1$ $N_5 = 1$

$\bar{d} = 2.33$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. 1 Sampling Method Surber Collection Date X-10-77

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	3	6
	Baetidae	*Baetis*	*bicaudatus*		15
		//	Sp. A	4	17
		Callibaetis			
		Ephemerella	Sp. A	3	33
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Comphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	Sp. A	1	77
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	1	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Cerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		Sp. A	4	99
	Ceratopogonidae				
				TOTAL 169	

Biologist [signature] Total Number of Taxa 6

$N_1 = 3$ $N_4 = 1$

$N_2 = 4$ $N_5 = 1$ $\bar{d} = 2.35$

$N_3 = 3$ $N_6 = 4$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. 2 Sampling Method Surber Collection Date X-10-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
	"	"	Sp. 2	21	2
		Rhithrogena	*undulata*	8	6
					6
	Baetidae	*Baetis*	*bicaudatus*	22	15
		Callibaetis			
		Ephemerella	Sp. A	2	33
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
		CAENIS	Sp. 2	1	11
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	Sp. A	6	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	1	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	Simulium	Sp. A	13	128
	Culicidae				
	Chironomidae	Chironomus	Sp. A	4	29
	Ceratopogonidae				
				79	

Biologist C Ray

Total Number of Taxa 10

TOTAL

$N_1 = 21$ $N_2 = 8$ $N_3 = 22$ $N_4 = 2$ $N_5 = 1$

$N_6 = 1$ $N_7 = 6$ $N_8 = 1$ $N_9 = 13$ $N_{10} = 4$

$\bar{J} = 2.66$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-3 Sample No. 3 Sampling Method Surber Collection Date X-10-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
	"	"	Sp. 2	4	2
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*	7	15
		Callibaetis			
		Ephemerella	Sp. 3	1	33
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	4	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	Sp. 1	1	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. 2	27	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	*Simulium*	Sp. 4	2	128
	Culicidae				
	Chironomidae				
	Ceratopogonidae	*Chironomus*	Sp. 2	2	99
				50	

Biologist C. Fang Total Number of Taxa 10

TOTAL

$N_1 = 4$ $N_6 = 1$

$N_2 = 1$ $N_7 = 1$

$N_3 = 7$ $N_8 = 27$

$N_4 = 1$ $N_9 = 2$

$N_5 = 4$ $N_{10} = 2$

$d = 2.28$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-4 Sample No. 1 Sampling Method Surber Collection Date X-12-74 Project NO. 1517-17

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		"			2
		Rhithrogena	*undulata*	13	6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	Sp. A	2	17
		Callibaetis			
		Ephemerella	Sp. A	1	33
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	Sp. A	1	77
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	1	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	*Simulium*	Sp. A	2	128
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				TOTAL 20	

Biologist C Ray Total Number of Taxa 6

$N_1 = 13$ $N_4 = 1$ $d = 1.72$

$N_2 = 2$ $N_5 = 1$

$N_3 = 1$ $N_6 = 2$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. 2 Sampling Method Surber Collection Date X-12-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		"	Sp. A	4	2
		Rhithrogena	*undulata*	13	6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	Sp. A	3	17
		Callibaetis			
		Ephemerella	Sp. A	1	33
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	Sp. A	1	75
		Arcynopteryx			
	Perlidae	*Taeniopteryx*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	1	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae		Sp. A	2	129
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				24	

Biologist [signature] Total Number of Taxa 7

TOTAL
$N_1 = 4$
$N_2 = 13$
$N_3 = 2$
$N_4 = 1$
$N_5 = 1$
$N_6 = 1$
$N_7 = 2$

$\bar{J} = 2.08$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. 3 Sampling Method Surber Collection Date X-12-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		"	Sp. A	2	2
		Rhithrogena	*undulata*	15	6
	Baetidae	*Baetis*	*bicaudatus*	2	15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	3	27
Odonata	Comphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	Sp. C.	1	75
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	Simulium	Sp. A	7	128
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				30	

TOTAL

$N_1 = 2$ $N_5 = 1$

$N_2 = 15$ $N_6 = 7$

$N_3 = 2$

$N_4 = 3$

$\bar{d} = 2.01$

Biologist [signature] Total Number of Taxa 6

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. 4 Sampling Method SURBER Collection Date X-12-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
	"	"	Sp. A	5	2
		Rhithrogena	*undulata*	7	6
	Baetidae	*Baetis*	*bicaudatus*	1	15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	Sp. A	2	77
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				TOTAL 15	

Biologist C Fay Total Number of Taxa 4

$N_1 = 5$
$N_2 = 7$
$N_3 = 1$
$N_4 = 2$

$\bar{d} = 1.69$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-11

Station No. E-5 Sample No. 1 Sampling Method Surber Collection Date X-11-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
			Sp. A	14	16.0458	2
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*	8	7.2247	27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx	Sp. A	1	0	77
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae		Sp. A	2	.6021	128
	Culicidae					
	Chironomidae		Sp. A	2	.6021	99
	Ceratopogonidae				25.6787	
				37		

TOTAL

$N_1 = 14$
$N_2 = 8$
$N_3 = 1$
$N_4 = 2$
$N_5 = 2$

Biologist C. Ray Total Number of Taxa 5

$J = \frac{1.60}{1.60}$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-5 Sample No. 2 Sampling Method Surber Collection Date X-11-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		"	Sp. A	3	2
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	Sp. A	2	17
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		Sp. A	1	99
	Ceratopogonidae				
			TOTAL	6	

Biologist [signature] Total Number of Taxa 3

$N_1 = 3$
$N_2 = 2$
$N_3 = 1$

$\bar{d} = 1.46$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-5 Sample No. 3 Sampling Method Surber Collection Date X-11-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
	"	"	Sp. A	2	2
		Rhithrogena	*undulata*	4	6
	Baetidae	*Baetis*	*bicaudatus*		15
	"	"	Sp. A	2	17
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	4	27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	Sp. A	1	77
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	Sp. A	2	95
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae		Sp. A	1	128
	Culicidae				
	Chironomidae		Sp A	5	99
	Ceratopogonidae				

TOTAL 20

Biologist _____ Total Number of Taxa 9

$N_1 = 2$ $N_1 = 1$
$N_2 = 4$ $N_3 = 2$
$N_3 = 2$ $N_6 = 1$
$N_4 = 4$ $N_9 = 3$
$N_5 = 1$

$J = 2.98$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-5 Sample No. 4 Sampling Method Surber Collection Date X-11-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Heptagena	*sp. A*	2	2
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	*sp. A*	1	77
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				TOTAL	
				3	

Biologist [signature] Total Number of Taxa 2

$N_1 = 2$

$N_2 = 1$

$\bar{d} = .92$

Ekenda Samples
Apr 15

x_i	x_i^2
16	256
4	16
13	169
0	0
23	529
31	961
9	81
0	0
0	0
$\Sigma 96$	$\Sigma 2012$

$\bar{x} = 10.7$

$\Sigma x_i^2 = 2012$

$(\Sigma x_i)^2 = (96)^2 = 9216$

$$S^2 = \frac{2012 - \frac{9216}{9}}{8} =$$

$$\frac{2012 - 1024}{8} = 123.5$$

$S = 11.1$

$$S_{\bar{x}} = \sqrt{\frac{S^2}{n}} = \frac{11.1}{3} = 3.7$$

$\bar{x} \pm (t)(S_{\bar{x}}) = 10.7 + 5.1$

$\simeq 11 \pm 5$

n = No samples required to estimate true mean within 25% at 2% level of statistical confidence

$$n = \frac{t^2 S^2}{(\bar{x} \times 0.1)^2} = \frac{(1.91)(123.5)}{(10.7 \times .1)^2} = \frac{235.9}{1.1}$$

$n = 214.5$

Confidence level for $n = 9$

$$9 = \frac{t^2 S^2}{(10.7\,t)^2} = \frac{235.9}{114.5t^2}$$

$$114.5t^2 = \frac{235.9}{9} = 26.2$$

$$\sqrt{114.5t^2} = \sqrt{26.2}$$

$$10.7\,t = \frac{5.1}{10.7} = 0.48$$

t (given) = 48% Confidence Limit = 52%

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 2 Sampling Method Ekman Collection Date III-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Cricotopus	sp	2	0.6021	130
		Stichochironomus	sp	9	8.5882	132
	Ceratopogonidae	Palpomyia	sp	4	2.4082	126
	Tubificidae	Limnodrilus	udekemianus	1	0.6	178
					~~9.1203~~	
			TOTAL	16		

Biologist [signature] Total Number of Taxa 4

$16 \log_{10} 16 = 19.2659$

$d = \frac{3.32192}{16} (19.2659 - 11.5985) = \frac{2.00}{} = 1.59$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-2 Sample No. 1 Sampling Method Ekman Collection Date IV-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomini	sp	2	0.6021	130
	Ceratopogonidae	Palpomyia	sp.	1	0	126
					0	
				1		195
			TOTAL	4		

Three remarks

Biologist [signature] Total Number of Taxa 3

$4 \log_{10} 4 = 2.4082$

$d = \frac{3.321928 (2.4082 - 0.6021)}{4}$

$= 1.49$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-2 Sample No. 2 Sampling Method Ekman Collection Date IV-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			.1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		G.	*Externus*	1	0	44
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	sp.	9	8.5582	130
		Stichtochironomus	sp.	3	.6021	132
	Ceratopogonidae	*Palpomyia*	sp	1		126
					9.1903	
			TOTAL	13		

Biologist Clay Total Number of Taxa 4

$13 \log_{10} 13 = 14.4813$

$\frac{3.32}{13} 1928 (14.4813 - 9.1903) =$

$d = 1.17$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-2 Sample No. 1 Sampling Method Ekman Collection Date IV-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus	sp	2	0.6021	130
	Ceratopogonidae	Palpomyia	sp.	1	0	126
					0	
				1		195
			TOTAL	4		

Chez nouvelle

Biologist [signature] Total Number of Taxa 3

$4 \log_{10} 4 = 2.4082$

$\bar{d} = \frac{3.321928\,(2.4082 - 0.6021)}{4} = 1.49$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-2 Sample No. 3 Sampling Method Surber Collection Date IV-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	2	

Biologist _____ Total Number of Taxa _____

Station F-3

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 21 Sampling Method Kicknet Collection Date III-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Cryptochironomus*	sp	15	12.1165	131
		Stichochironomus	sp	2	.6021	132
	Ceratopogonidae	*Palpomyia*	sp	3		126
Annelida	Tubificidae	*Limnodrilus*	*udekemianus*	2	.6021	178
	Naididae	*Naidium*	*osborni*	1	0	179
					13.3207	
			TOTAL	23		

$23 \log_{10} 23 = 31.3197$

$\bar{d} = \frac{3.321928\,(31.3197 - 13.3207)}{23} =$

$\bar{d} = 2.60$

Biologist [signature] Total Number of Taxa 5

shower 2

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. (3) Sampling Method Ekman Collection Date 10-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	[illegible]	3		33
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae				$n \log_{10} n$	
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Tanytarsini	Sp A *	6	4.6689	
		Stempellinini	Sp B	18	22.5749	
	Ceratopogonidae	*Palpomyia*	sp	3	1.4314	126
	Empididae	(Ole generic key)		1	0.0	
					28.6952	

Sp. A = high [illegible] ... Sp. B = small ... with [illegible]

TOTAL 31

$\log_{10} 31 = 46.2322$

Biologist [illegible] Total Number of Taxa 5

$\bar{d} = \frac{5.321928}{31}(46.2322 - 28.6952)$

$\bar{d} = 1.88$

Stag nant pond on left bank.

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4' Sample No. 1 Sampling Method Ekman Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
Plesiopora	Tubificidae	*Limnodrilus*	~~cuscutensis~~ hoffmeisteri	194	
				TOTAL 194	

Biologist [signature] Total Number of Taxa 1

$\bar{d} = 0.0$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-4 Sample No. 3 Sampling Method Kicknet Collection Date III-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae		sp. A	2	0.6021	
		Stichochironomus	sp. B	6	4.6689	
	Ceratopogonidae				5.2710	
	Tubificidae	Limnodrilus	CLAPAREDIANUS	1	0.3	
			TOTAL	9		

Biologist _____ Total Number of Taxa 3

$\bar{g}_{10} = 9 - 8.5882$

$d = 3.321928 (8.5882 - 5.2710)$

$d = 11.22$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-5 Sample No. 263 Sampling Method Ekman Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	0	

Biologist [illegible] Total Number of Taxa 0

Both Samples empty (nothing)

F-1 Algae - Periphyton

Collected II-1-75 Preserved in Formalin & glacial acetic

Examined II-6-75

Cladophora glomerata	A
Cladophora sp (?)* Diminutive — hair-like terminal Trichomes	C
Mougeotia sp	I
Cocconeis placentula	A
Navicula cryptocephala	a
Gomphonema olivaceum	a
Tabellaria fenest. flocculosa	R
Fragillaria capucina	I
Mastigloeia sp	I
Fragillaria intermedia	C
Epithemia zebra	C
Diatoma hiemale	C
Ter. Teratomorpha sp	I
Synedra ulna	C

F-2 Algae - Periphyton

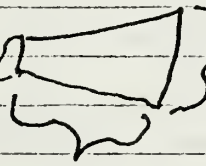
Collected IV-3-75

Examined IV-6-75

1	Cladophora glonerata	A
8	Gomphonema olivaceum	A
7	Fragillaria	C
2	Cocconeis	A
3	Cymbella	C
4	Diatoma	C
9	Navic crypto ~~cymbella~~	C
10	Nitzschia sigmoidea	I
5	Epithemia	C
13	Rhopalodia	R
16	Synedra ulna	I
15	Spirulina	I
12	Rhizoclonium	R
6	Euglena sp	R
14	Spirostomum sp	R
11	Paramecium	R
17	Tabellaria	

T-3 Algae - periphyton
Collected @ 1:00 PM IV-6-75
Examined immediately.

Gomphonema (olivaceum - ??)
form slippery brownish slime on downstream side of stones, sticks, etc.
forms are stalked; ~~coccoid~~ lacrimoid in valve view, wedge shaped in girdle.
Girdle view: 20 x 14 μ at widest, 3± μ at narrow end



- some to 30 μ long
striae ca 10/10 μ.

Cymbella ventricosa common
Synedra ulna "
Fragillaria intermedia common
Mastigloia Brauneii common
Epithemia zebra abundant
Cocconeis placentula common

F-3 (cont)

Navicula sadivisa ~~33X X 10~~ 33X7μ 10X50μ — common striac 12/10μ, " 11/10μ

Navicula (Zanonis?) rare

Diatoma hiemale — uncommon

Rhopalodia (gibba?) — rare

Paramecium

Cephanothece

Cladophora - tiny sp. with knoblike terminus on branches

Synedra ulna

F-4 River Periphyton II-2-75

Examined 4-7-75

1	Cosmarium	sp	rare
4	Gomphonema	olivaceum	~~abundant~~
4	Cymbella	affinis	common
8	Ulnaria	sp	rare
2	Cocconeis	placentula	~~common~~ abundant
10	Pharmidium	sp	most abundant
5	Epithemia	sorex	common
7	Mastigloia	elliptica	~~Infreq.~~ Rare
12	Navicula	gibba	rare
9	Navicula	zanoni	common
3	Cyclotella	sp	rare
11	Pinnularia		Infreq.
	~~Entomoneis~~		
13	Thalassiosira		

F-4 Pond periphyton - from stagnant pond on left bank 100 m below gauge
Collected IV-2-75
Examined 4-6-75

16.5 × 13.3

Euglena sp	rare
Cymbella ventricosa	
Gomphonema olivaceum	common
Epithemia sorex	common
Navicula cryptocephala	common
Diatoma ~~bicinate~~ vulgare	common
Synedra sp	common
Nitzschia sigmoidea	rare
Surirella ovalis	uncommon
Rhopalodia gibberula	rare
Cyclotella (meneghiniana?)	"

Costa short & stout - centre was obscured

Pond plankton cont.

Synedra ulna	common
Amphipleura (pellucida ?)	rare
Surirella angustata	rare
Diatoma	

F-5 Algae - Periphyton

Collected ~~III~~ 2-75
Examined ~~III~~ -7-75

1	Amphipleura	
2	Cladophora glomerata	A
3	Cocconeis placentula	A
4	Cymbella affinis	C
5	cymbella sp.	I
6	Diatoma hiemale	C
7	Fragilaria	
8	Epithemia sorex	I
9	Gomphonema olivaceum (?)	
10 & 11	Navicula cryptocephala	C
12	Nitzschia sp.	
13	Phormidium sp	I
14	Pinnularia	
15	Rhopalodia gibba	
16	Spirogyra	
18	Surirella	
19	Synedra	
17	Spirulina	

Evacuation Creek Periphyton
Collected IV-3-75
Examined IV 6-75

Fragillaria sp — abundant
~~Nitzschia~~ sp tribonema — common
Cells ca 18 x 9 μ to 25 x 8 or 9 μ
Chloroplast appears to be parietal & reticulate
Slides @ 41 & 45

Ulothrix sp — common
Fragillaria — abundant
~~Trichodesmium~~ Microcoleus sp — abundant
Spirogyra — common
Gomphonema (olivaceum?)
Epithemia sorex
Surirella (ovalis?) common folds 7/10 μ
do not extend to center. Very similar to S. brightwellii in sculpture but less pointed than shown by E & P & Weber

July 15 Plankton Stats

x_i	x_i^2
71.3	5975
57.3	3283
60.0	3600
48.3	2333
40.0	1600
Σ: 282.9	Σ 16791

$\bar{x} = 56.6$

$\Sigma x_i^2 = 16791$

$(\Sigma x_i)^2 = 80032$

$$S^2 = \frac{16791 - \frac{80032}{5}}{5} = 196.25$$

$S = 14$

$$S_{\bar{x}} = \frac{14}{\sqrt{5}} = \frac{14}{2.2} = 6.4$$

$\bar{x} \pm (t)(S_{\bar{x}}) = 56.6 \pm 9.8$

$\approx 57 \pm 10$

n = No. Samples required to estimate true mean with 25% at 90% level of statistical confidence

$$n = \frac{t^2 s^2}{(\bar{x} \times 0.1)^2} = \frac{300.8}{(56.6 \times 0.1)^2} \approx \frac{301}{32} = 9.7$$

Confidence level at $n = 5$

C = 1 − confidence level

$$5 = \frac{t^2 s^2}{(\bar{x} \times C)^2} = \frac{300.8}{3203.6 C^2}$$

$$5(5203.6 C^2) = 300.8 = 60.1$$

$$\sqrt{3203.6 C^2} = \sqrt{60.1}$$

$$56.6 C = \frac{7.7}{56.6} = 0.136 \quad CL = 86\% \pm$$

April 75 Plantator

x_i	x_i^2	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
9.7	94.1	-2.0	4.0
9.4	88.4	-2.3	5.3
4.8	23.0	-6.9	47.6
22.2	492.8	10.5	110.2
12.3	151.3	0.6	0.4
Σ 58.4	Σ 849.6		Σ 167.5

$\bar{x} = 11.7$

$$S^2 = \sum_{i=1}^{5} (x_i - \bar{x})^2 = \frac{\sum_{i=1}^{5} x_i^2 - \frac{\left(\sum x_i\right)^2}{n}}{n-1}$$

$\sum x_i^2 = 849.6$

$\left(\sum x_i\right)^2 = 3410.6$

$$\frac{(x_i - \bar{x})^2}{n-1} = \frac{167.5}{4} = 41.9$$

$$S_{\bar{x}} = \sqrt{\frac{S^2}{n}} = \frac{6.5}{2.2}$$

$S_{\bar{x}} = 2.95 \simeq 3.0$

$$\frac{\sum x_i^2 - \frac{\left(\sum x_i\right)^2}{n}}{n-1} = \frac{849.6 - \frac{3410.6}{5}}{4}$$

$n-1\ t_{90} = 1.533$

$\bar{x} \pm (t)(S_{\bar{x}}) = 1.533(3.0)$

$= \frac{849.6 - 682.1}{4} = 41.9$

$\pm \simeq 4.6$

11.7 ± 4.6

$$n = \frac{t^2 S^2}{(\bar{x} \times 0.1)^2} = \frac{(2.35)(41.9)}{(11.7 \times 0.1)^2} = \frac{98.5}{1.37} = 71.9$$

n = No. Samples required to predict true mean within 25% @ 90% Confidence

April 75 Plankton Continued

Confidence Level

$$\text{no samples} = \frac{(t^2 s^2)}{\bar{x} \times \%\text{error}}$$

$$5 = \frac{t^2 s^2}{(11.7 \times C)^2} = \frac{98.5}{136.9C^2}$$

$$5(136.9C^2) = \frac{98.5}{5} = 19.7$$

$$\sqrt{139.6C^2} = \sqrt{19.7}$$

$$11.7C = \frac{4.4}{11.7} = 0.37$$

% error = 3.7%

Confidence level = 66%

Quantitative Plankton

F, d 2 Collected III-1-75

Examined III-7-75

2200 ml sample - concentrated to 25 ml

Cell #1 E=5

1 mm Strip (50 mm long) Count

1	60
2	57
3	~~50~~
4	43
	210

17 X 5 = 855/ml

855/ml x 25 ml = 21375

21375 cells/ml / 2200 ml =

9.7 cells/ml

Cell #2

Strip	Count
1	28
2	68
3	40
4	68
	194

Spirulina

Tabellaria

Gyrosigma

Schroderia (?) Pore

Cell #3

Strip	Count
1	20
2	24
3	39
4	25
	108

210
194
108
512
3

$\bar{x} = 171$

& Plankton

25 ml

F-2 & 2 Collected IV-3-75

Examined IV-3-75

Count			
1	57		
2	56		
3	49		
4	23		
	185	185	95 mm
	2	140	57
	28	174	
1	57		
2	25	$\bar{x} = \frac{499}{3} \approx 164$	
3	30		
4	140		
	1	Factor $= \frac{1000 mm^2}{200 mm^3} = 5$	
	34		
2	65		
3	35	No/ml $= 166 \times 5 = 830$	
4	41		
	174	$830/ml \times \frac{25}{2200} ml = 20750/sample$	
	174	$20,750/2200 ml = 9.4/ml$	

499

F-3 d3 Quant. Plankton 25 ml sample (Concentrate)

Collected III-1-75 Examined III-7-75

Cell #1

Strip (1x50mm)	Count	E factor = 5
1	33	101
2	23	81
3	19	71
4	26	
	101	253 = 84.3
		3
		$\bar{x} \approx 84$

Cell #2

Strip	Count	84 x 5 = 420 cells/ml
1	22	420 x 25 = 10500/sample
2	18	
3	25	= 4.8 cells/ml in
4	16	original sample
	81	

Cell #3

Strip	Count	$\bar{x}$ = 4.8 cells/ml
1	24	
2	14	
3	18	
4	15	
	71	

50 ml

F-4 & 3 IV-2-75 IV-7-75

Count	
1	24
2	28
3	57
4	34
	143
1	28
2	43
3	65
4	48
	184
1	53
2	55
3	82
4	67
	257

Labellation flocculus

21.4

E=5

584/3 = x̄ ≈ 195

195 x 5 = 975/ml x 50 ml =

48750 cells/50 ml sample

22.2 cells/ml original sample

F-5 X 1 Quant. Plankton 25ml concentrate

Collected IV-2-75 Examined IV-7-75

E factor = 5

Cell #1

Strips (1x50mm)	Count
1	52
2	60
3	51
4	34
	197

216 X 5 = 1080

1080 cells/ml x 25ml

= 27000 cells/sample

$\frac{27,000}{2200}$ = 12.3/ml

Cell #2

Strip	Count
1	56
2	60
3	60
4	45
	221

Cell 3

Strip	Count
1	2
2	49
3	61
4	64
	57
	231

231
197
221
649 ≈ 216 = X
3

INVERTEBRATE DATA JULY, 1975

COLLECTED WITH EKMAN DREDGE

Station	Sample
F-1	0
F-2	10 Chironomidae
F-3	1 Ophiogomphus severus
	1 Simuliidae
F-4	29 Chironomidae
F-5	1 Nematomorpha
	1 Corixidae

$\Sigma = 43$

$n = 5$

$\bar{x} = 8.6$

$S^2 = 144.85$

$S = 12.03$

$S_{\bar{x}} = 5.37$

$n-1\ t = 1.533$

$\bar{y} \pm (t)(S_{\bar{x}}) \cong 8.6 + 8.3$

$n = 459.8$ (no. samples required to estimate true mean @ 90% confidence level

$CL = 04\%$

Calcs on reverse

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 1 Sampling Method Kick Net Collection Date VII-21-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	0	

Biologist [signature] Total Number of Taxa 0

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-2 Sample No. 1 Sampling Method Kicknet Collection Date VI-23-75 Project NO. _____

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae 10 KOH			10	
	Ceratopogonidae				
			TOTAL	10	

Biologist C. [illegible] Total Number of Taxa 1

MACROINVERTEBRATE LAB WORKSHEET

Station No. 5-3 Sample No. 2 Sampling Method Ekman Collection Date VIII-21-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	0	

Biologist [signature] Total Number of Taxa 0

MACROINVERTEBRATE LAB WORKSHEET

Station No. E-3 Sample No. 3 Sampling Method Surber Collection Date VIII-21-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	2	

Biologist [signature] Total Number of Taxa 2

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-11 Sample No. 1 Sampling Method Ekman Collection Date VII-24-75 Project NO. _____

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			29	
	Ceratopogonidae				
			TOTAL	29	

Biologist [signature] Total Number of Taxa 1

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-5 Sample No. 1 Sampling Method Eleman Collection Date VII-22-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
	CORIXIDAE	CYMATIA (?)		1	
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
Nematomorpha				1	
			TOTAL	2	

Biologist _____ Total Number of Taxa 2

Table . Invertebrate Data, July, 1975; collected with screen section.

Station	F-1			F-2			F-3			F-4			F-5		
Sample #	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Ephemeroptera															
Heptagenia elegantula (?)		1		1	4		13			3					2
Rhithrogena undulata (?)	1		1	2	8		1	3					2		5
Baetis (?) sp.															2
Amaletus (?) sp.															1
Pseudocloeon turbidum	13	4			2	1									2
Dactylobaetis cepheus	11	2			1								1		2
Lachlania saskatchewanensis										3					1
Traverella albertana	40	8	3												12
Ephemerella sp.	1	2	2	3	11		24	1		3					8
Baetidae		1													
Odonata															
Gomphus intricatus				3											
Ophiogomphus severus				8	2		1			2			2		1
Plecoptera								1							
Isogenoides frontalis colubrinus		2													
Trichoptera															
Hydropsyche sp.	1	3		1											
Brachycentrus sp.							2	1		1					4
Oecetis sp.	1	1	1		1		13			4					18
Limnephilidae	1														1
Diptera															
Chironomidae	9	3		1	2			12		1					6
Simuliidae	90	22						1							15
Blephariceridae								1							1
Oligochaeta															
Limnodrilus eudekemianus					1										
Naididae		1													
Total	68	50		19	32	1	54			11			5	0	81

Qualitative only - no Stds.

F-2 Sample 2 should read 33

Grand Total = 33

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1617

Station No. E 1 Sample No. 1 Sampling Method Screen Collection Date VIII-27-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*	1	
	Baetidae	*Baetis*		*	6
		Pseudocloeon	*turbidum*	13	15
		Dactylobaetis	*cepheus*	11	
	Ephemerellidae	*Ephemerella*		1	
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*	40	
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
	Hydroptilodae	Pupa		1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
	Leptoceridae	*Oecetis* (?)		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			90	
	Culicidae				
	Chironomidae			9	
	Ceratopogonidae				
			TOTAL	158	

Biologist Ofinf Total Number of Taxa 10

* Weight (100) entire sample mayflies 1½ min.

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 2 Sampling Method Screen Collection Date VII-27-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	1	1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		unknown		1	
		Pseudocloeon	*turbidum* IIII	4	15
		Dactylobaetis	*cepheus* II	2	
	Ephemerellidae	*Ephemerella*		2	
	Trichorythidae	*Trichorythodes*			
					36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana* IIII II	7	
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*	*frontalis*	2	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		2	
	Limnephilidae			1	
	Brachycentridae	*Brachycentrus*			
	Leptoceridae		pupa	1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			32	
	Culicidae				
	Chironomidae			3	
	Ceratopogonidae				
	naididae			1	
			TOTAL	50	

Biologist [signature] Total Number of Taxa 12

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 3 Sampling Method Surber Collection Date VII-27-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*	1	
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*		2	
	Trichorythidae	*Trichorythodes*			
					36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*	3	
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
	Leptoceridae	Oecetis (?)		1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	7	

Biologist [illegible] Total Number of Taxa 4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 1 Sampling Method Screen Collection Date VII-23-95

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	1	1
		Rhithrogena	*undulata*	2	
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*		3	
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*		
	Gomphidae	*Gomphus*	*lividus*		43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	(?)	1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	*Chironomus*		1	
	Ceratopogonidae				
			TOTAL	19	

Biologist _____ Total Number of Taxa 7

Oncholaimus ?

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 2 Sampling Method [illegible] Collection Date VII-23-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	4	1
		Rhithrogena	*undulata*	8	
	Baetidae	*Baetis*			6
					15
early instar		*Pseudocloeon*	*turbidum*	2	
		Dactylobaetis	*cepheus*	1	
last instar ?	Ephemerellidae	*Ephemerella*		11	
	Trichorythidae	*Trichorythodes*			
					36
	Oligoneuriidae	*Lichlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*		
					43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Leptoceridae		*Oecetis* ?		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae			2	
	Chironomidae				
	Ceratopogonidae				
Gastropoda		*Lymnaea* ?		1	
Limnodrilus		[illegible]		1	
			TOTAL	33	

Biologist [signature] Total Number of Taxa 10

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-2 Sample No. 3 Sampling Method Surber Collection Date VII-23-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*	1	15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*			
	Trichorythidae	*Trichorythodes*			
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		36
	Leptophlebiidae	*Trauerella*	*albertana*		27
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist [illegible] Total Number of Taxa 1

Creal

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-3 Sample No. 1 Sampling Method Surber Collection Date VII-19-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	13	1
		Rhithrogena	*undulata*	1	
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*		24	
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		2	
Lepidostomatidae		*Oecetis* (?)		13	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	54	

Biologist [signature] Total Number of Taxa 16

Qualitative

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1527

Station No. F-3 Sample No. 2 Sampling Method Screen Collection Date III-19-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*	3	
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*		1	
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		52	1	
	Ceratopogonidae		+	1	
	Blephariceridae			1	
			TOTAL	6	

Biologist [illegible] Total Number of Taxa 6

MACROINVERTEBRATE LAB WORKSHEET

Station No. E-2 Sample No. 1 Sampling Method Surber Collection Date _____ Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	2	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		2	
		Trichorythodes	*minutus*		36
		Lachlania		3	
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*	2	43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		4	
		OECETIS			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			1	
	Ceratopogonidae				
			TOTAL	17	

Biologist Okay Total Number of Taxa 7

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1617

Station No. F-4 Sample No. 1 Sampling Method Surber Collection Date VII-22-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*	2	
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*	1	
	Ephemerellidae	*Ephemerella*			
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Trauerella*	*albertana*		43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	5	

Biologist [illegible] Total Number of Taxa 3

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-5 Sample No. 2 Sampling Method [illegible] Collection Date VII-95 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*			
	Trichorythidae	*Trichorythodes*			
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		36
	Leptophlebiidae	*Trauerella*	*albertana*		27
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL		

Biologist _____ Total Number of Taxa _____

Quantitative

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F5 Sample No. 3 Sampling Method Surber Collection Date VII-22-95

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	2	1
	late instar	*Rhithrogena*	*undulata*	5	6
	Baetidae	*Baetis*	*bicaudatus*	2	15
		Callibaetis			
	last instar	*Ephemerella*	*par* armeletus	8	
		Trichorythodes	*minutus*	1	36
		Lachlania		1	
		Traverella	*albertana*	12	27
		Pseudocloeon		3	
		Dactylobaetis		2	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae			1	
	Brachycentridae	*Brachycentrus*		4	
		OECETIS		18	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			15	
	Culicidae				
	Chironomidae			16	
	Ceratopogonidae				
	Blepharoceridae			1	
			TOTAL	81	

Biologist [signature] Total Number of Taxa 16

* one

Table 2. Invertebrate Data Summary, July, 1975; collected by Surber sampler.

Station	F - 1		F - 2				F - 3				F - 4				F - 5		
Sample #	1	2	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
Ephemeroptera																	
eptagenia elegantula (?)															1		
iithrogena undulata (?)	1	2	1			1						2			1	1	
caverella albertana	1	1				2						6			12	3	
hemerella sp.	1	1					1								1	1	1
ctylcbaetis cepheus			1			1	1										1
eudocloeon turbidum							1	1							1		
ichlania sakatchewanensis																1	
Odonata																	
				2													
hiogomphus severus																	
Plecoptera																	
ogenoides frontalis																	
Trichoptera																	
dropsyche sp.																	
cetis sp.						1	1	1	1						6	5	3
achycentrus sp.																	
Diptera																	
muliidae									1			3			1		
ironomidae	1					1						1					
Total	4	4	2	2		1 5	0	4	3	1	0	10 12	0	0	22 24	11	5

ERROR ERROR

~~$\bar{x} = 4.47$~~

$\Sigma x_i = 78$

$\bar{x} = 4.58$

$n = 17$

$n-1 = 16$

$n-1\ t_{.90} = 1.337$

$S^2 = 36.2$

$S = 6.01$

$\bar{x} \pm (t)\, S_{\bar{x}} \approx 5 \pm 2$

$(S_{\bar{x}} = 1.46)$

n = #Samples required for 90% confidence in mean

$$n = \frac{t^2 S^2}{L^2} = \frac{(1.337^2)(36.2)}{(4.6 \times 0.1)^2} = \frac{(1.79)(36.2)}{0.21} = 308.6$$

CL 58% +

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 1 Sampling Method Surb Collection Date VII-20-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			1	
	Ceratopogonidae				
			TOTAL	4	

Biologist [signature] Total Number of Taxa 4

J Not applicable

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-1 Sample No. 2 Sampling Method Surber Collection Date III-20-75 Project NO. _____

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	2	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	4	

Biologist _____ Total Number of Taxa 2

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-2 Sample No. 1 Sampling Method Surber Collection Date VII-23 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
		Diphetor		1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	2	

Biologist Clay Richardson Total Number of Taxa 2

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-1 Sample No. 2 Sampling Method Surber Collection Date VII-23-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	2	

Biologist [signature] Total Number of Taxa 1

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 3 Sampling Method Surber Collection Date VII-25-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*	*fuiz*	1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist [signature] Total Number of Taxa 1

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-2 Sample No. 4 Sampling Method Surber Collection Date VII 23-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella / *Dactylobaetis*	*albertana*	2 / 1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			1	
	Ceratopogonidae				
			TOTAL	5	

Biologist C. Ling Total Number of Taxa 4

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-3 Sample No. 1 Sampling Method Surber Collection Date VII-11-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	0	

Biologist [signature] Total Number of Taxa 0

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. 2 Sampling Method Surber Collection Date VII-21-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
		Leptohyphes		1	
		Tricorythodes		1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
	Leptoceridae	*Oecetis*		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	4	

Biologist [signature] Total Number of Taxa 4

[signature]

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-3 Sample No. 3 Sampling Method Surber Collection Date VIII-21-75 Project NO. 1617

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella / Pseudocloeon	*albertana*	1	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae / Leptoceridae	*Brachycentrus* / Oecetis (2). pupa		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL		

Biologist [signature] Total Number of Taxa 2

MACROINVERTEBRATE LAB WORKSHEET

Station No. E-3 Sample No. 4 Sampling Method Surber Collection Date 11-21-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae (Eucapnopsis)	*Brachycentrus*	*Americanus*	1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist _____ Total Number of Taxa 1

MACROINVERTEBRATE LAB WORKSHEET

Station No. E-4 Sample No. 1 Sampling Method Surber Collection Date 11-24-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				TOTAL	3

Biologist _____ Total Number of Taxa 0

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-4 Sample No. 2 Sampling Method Surber Collection Date VII-24-75 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	3	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	IIII 12	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae			3	
	Chironomidae			1	
	Ceratopogonidae				
			TOTAL	12	

Biologist _____ Total Number of Taxa 4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-4 Sample No. 9 Sampling Method Surber Collection Date III-24-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	0	

Biologist _____ Total Number of Taxa _____

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-4 Sample No. 5 Sampling Method Surber Collection Date VII-24-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
Unidentified Planarian		(Typanosoma?)		1 *	
			TOTAL	0	

Biologist [signature] Total Number of Taxa 0

* Animal - Unidentified worm collected

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-5 Sample No. 1 Sampling Method Surber Collection Date VII-24-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	12	27
		Pseudocloeon		1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
	Leptoceridae	Oecetis		6	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	24	

Biologist [signature] Total Number of Taxa 8

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. L-5 Sample No. 2 Sampling Method Surber Collection Date 11-24-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania		1	
		Traverella	*albertana*	3	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
	Leptoceridae	*Oecetis*	sp	5	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	11	

Biologist [illegible] Total Number of Taxa 6

1st Lachlania in this year - only 2nd so far

" Traverella " " "

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1577

Station No. F-6 Sample No. 3 Sampling Method Surber Collection Date VII-24-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*	1	15
		Callibaetis			
		Ephemerella		1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
		Oecetis		3	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	5	

Biologist [signature] Total Number of Taxa 3

Table 7. Taxa and numbers of insects captured per square foot (0.093 square meter) April, 1975

Station	F-1		F-2					F-3				F-4					F-5		
Sample #	1	2	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3
Ephemeroptera																			
cena elegantula	1	1	3				1	3	2			3	1		2				
rogena unculata (?)				5	1	1		6	1		4	5		1	5	2	2	1	
s sp.	1			1		2	4			2		1							1
erella tibialis (?)	3	2	4				3	4	6	1	5		3	1	6	3			2
Odonata																			
comphus severus		1							2		1								
Plecoptera																			
teryx fosketti *		2		2					1	1									2
erla longiseta (?)			1					1	3				3	2	4	5			
enoides frontalis-errinus		11		3				2			8		1		2				3
neuria (abnormis?)											1								
ddidae												2							
aperla sp (?)															1				
Trichoptera																			
opsyche sp.		9		2				1	1										
Diptera																			
lium sp.	3		2				1		1										
onomus sp							2	2		1	2		4		5				
iocladius (?) sp.											1								
tochironomus sp.								2								2			
ntochironomus sp.		1						28		1							1		
omyia sp.									6										
hariceridae									1										
lida																			
odrilus udekemianus							1							2					1
Total	8	27	10	8	6	4	11	49	24	6	22	11	12	6	25	12	3	1	9

* Several designations on this table have been changed from the original report at the advice of an expert in the field.

Calculations on reverse

$S^2 = 2.4$

$\frac{\sum x_i(\bar{x}-x_i)}{n-1} = 13.4$ (See reverse)

$S^2 = 13.4$

$\bar{x} = 11.5$

$S = 3.7$

$CV = \frac{3.7}{11.5} \times 100 = 32\%$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 1 Sampling Method Surber Collection Date IV-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
			sp	1	
		Callibaetis			
		Ephemerella		3	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae	Simulium	sp.	3	
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	8	

Biologist _____ Total Number of Taxa 4

$\bar{d} = 1.81$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1617

Station No. F-1 Sample No. 2 Sampling Method S R Collection Date IV 1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	1	1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*	*invenis* (?)	2	
	Trichorythidae	*Trichorythodes*			36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		27
	Leptophlebiidae	*Traverella*	*albertana*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*	*spontalis*	11	
		Arcynopteryx			
		Oemapteryx		2	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		4	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	*Stichtochironomus*	?	1	
	Ceratopogonidae				
			TOTAL	22	

Biologist _____ Total Number of Taxa 7

$\bar{d} = 2.14$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 1 Sampling Method Surber Collection Date III-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	*tibialis*	4	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx		1	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			2	
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	10	

Biologist [illegible] Total Number of Taxa 4

$\bar{d} = 1.85$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 2 Sampling Method Surber Collection Date IV-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	5	6
	Baetidae	*Baetis*	*bicaudatus*		15
			sp	1	
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	sp	2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	8	

Biologist [illegible] Total Number of Taxa 3

$\bar{d} = 1.30$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 3 Sampling Method Surber Collection Date 10-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* (*Isogenoides*)	*frontalis*	3	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	2 (adult, 1 nymph)	65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	6	

Biologist [signature] Total Number of Taxa 3

$\bar{d} = 1.46$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 4 Sampling Method Surber Collection Date 10-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
			sp	2	
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	4	

Biologist [illegible] Total Number of Taxa 3

d = 1.50

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 5 Sampling Method Surber Collection Date 10-3-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
			sp	4	
		Callibaetis			
		Ephemerella	sp	3	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae	Chironomus	sp	2	#10 KOH on slide
	Ceratopogonidae				
			TOTAL	11	

Biologist [signature] Total Number of Taxa 5

$d = 2.12$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. (2) Sampling Method Surber Collection Date 11-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1
		Rhithrogena	*undulata*	~~4~~ 6	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		4	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*		2	
		Arcynopteryx	sp	1	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	sp	1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Chironomus	spd	2	
		Eucricotopus	sp ?	2	
	Ceratopogonidae				
		chironomid		~~2~~	

Biomass insignificant TOTAL 49

Biologist 1 Total Number of Taxa 9

$\bar{d} = 2.2$

$N_a = 2$ — 0.6021

$N_b = 1$ — 0.00

$N_c = 6$ — 2.0573

$N_d = 2$ — 0.6021

$N_e = 3$ — 1.4314

$N_f = 1$ — 0.00

$N_g = 1$ — 0.00

$N_h = 1$ — 0.00

$N_i = 6$ — 2.8573

$N_j = 1$ — 0.00

$N = 24$ — 8.3502

$\frac{\log}{24} = .1384136$

$24 \log_{10} 24 = 33.1251$

$\sum N_x \log_{10} N_x = 8.3502$

$= \frac{3.321928}{24}(24.7749) =$

$0.1384(24.7749) = 3.43$

$\bar{d} = 3.43$

Shannon #3

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 41 Sampling Method Surber Collection Date IV-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	sp	2	
		Callibaetis			
		Ephemerella	sp	1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae Brachyptera	(*Taenionema*)	*pacifica*	1	65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		sp. A	1	
			sp B	1	
	Ceratopogonidae				
			TOTAL	6	

Biologist _____ Total Number of Taxa 5

$\bar{d} = 2.25$

Shoulder #4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 16 Sampling Method Surber Collection Date 11-1-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	4	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	*tibialis*	5	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*Dicosmoecus*	8 (6>2cm)	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria	*pacifica (?)*	1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Chironomus (Tribelos)	sp. A sp.	2 1	
	Ceratopogonidae				
			TOTAL	22	

Biologist [signature] Total Number of Taxa 7

$\bar{d} = 2.39$

E. tibialis

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. 1 Sampling Method Surber Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1
		Rhithrogena	*undulata*	5	6
	Baetidae	*Baetis*	*bicaudatus*		15
		"	~~bicaudatus~~ *bicaudatus*(?)	1	
		Callibaetis			
		Ephemerella	~~tibialis~~		
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx	DIDAE?		
	Perlidae	*Taenionema*	*pacifica*	2	65
		Acroneuria	~~Unidet~~ ~~sp~~	2	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	11	

Biologist [signature] Total Number of Taxa 4

Na 3 Nd 2
Ns 5
Ne 1

d = 1.79

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-4 Sample No. 2 Sampling Method Surber Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	*Lubicki* 3	3	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus (Isogenoides)*	*Frontalis colubrinus(?)*	1	
		Arcynopteryx	≈3	3	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	*Chironomus (?)*	*Sp.*	4	
	Ceratopogonidae				
				TOTAL 12	

3 Chironomidae in F-4

Biologist [signature] Total Number of Taxa 5

$N_a = 1$ $N_b = 3$ $N_c = 1$ $N_d = 3$

$N_e = 4$

$\bar{d} = 2.13$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-4 Sample No. 3 Sampling Method Surber Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*	1	0.0	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	*Tibialis*	1	0.0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx	Spp	2	.6021	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
		Limnodrilus	*Eudekeninnus?*	2	.6021	
				TOTAL 6		

Biologist C Kerry Total Number of Taxa 4

$\bar{d} = 1.92$

$N_a = 1$

$N_b = 1$

$N_c = 2$

$N_d = 2$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-4 Sample No. 4 Sampling Method Surber Collection Date III-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	2	1
		Rhithrogena	*undulata*	5	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	*tibialis*	6	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* (*Isoperla*)	*frontalis* (*colibrinus*?)	2	
		Arcynopteryx		4	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Hastaperla	*sp* 1	1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae *	Tanytarsus	4 = 1 adult	5	
	Ceratopogonidae				

d = 2.61

small green - no obl. gills

TOTAL 25

Biologist [illegible] Total Number of Taxa 7

$N_a = 2$ $\log_{10} N_a = 0.6021$ $N_e = 4$ = 2.4382

$N_b = 5$ $\log_{10} N_b = 3.4949$ $N_f = 1$ = 0.00

$N_c = 6$ = 4.6689 $N_g = 5$ = 3.4949

$N_j = 2$ = 0.6021 15.3711

$25 \log_{10} 25 = 34.9485$

$d = 2.6147$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-4 Sample No. 5 Sampling Method Surber Collection Date IV-2-75 Project NO. 1517-17

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*	2	.6021	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	~~*tibialis*~~	3	1.4314	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx		5	3.4949	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Tanypo	Sp	2	.6021	
	Ceratopogonidae					
			TOTAL	12		

Biologist [signature] Total Number of Taxa 4

$N_a = 2$
$N_b = 3$
$N_c = 5$
$N_d = 2$

$\bar{d} = 1.89$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1577

Station No. F-5 Sample No. 1 Sampling Method Surber Collection Date 10-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*	2	.6021	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Tendipedidae	sp.	1	0.0	
	Ceratopogonidae					
			TOTAL	3		

Biologist [illegible] Total Number of Taxa 2

$(1.3333 - 3.3021) \times \frac{3.321928}{3}$

$= 0.92$

shown as on chart

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-5 Sample No. 3 Sampling Method Surber Collection Date IV-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist Gary Dailey Total Number of Taxa 1

$\bar{d} = 0.0$

Sample discarded

shown as #3 on chart

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-5 Sample No. 41 Sampling Method Surber Collection Date III-2-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus* tricaudatus	1	0.0	15
		Callibaetis				
		Ephemerella	*tibialis*	2	.6021	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*	*frontalis*	3	1.4314	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica* (1♀ adult)	2	.6021	65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
	Tubificidae	~~Limnodrilus~~ drilus	*cervicosus*	1	0.0	
			TOTAL	9	Σ 2.6356	

Biologist CR Total Number of Taxa 5

~~6.1952~~ d = 2.20

Sample Needed - Forgot to add preservative.

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-5 Sample No. 5 Sampling Method Surber Collection Date IV-27-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
				TOTAL	

Biologist C Pan Total Number of Taxa

Form 1279–3
(June 1984)

BORROWE

QH 549 .U82 W41
Quarterly report
Environmental B

DATE LOANED	BORROWER

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